ARCADIS Design & Consultancy for natural and built assets

Atlantic Richfield Company

ARIMETCO HEAP LEACH FLUID MANAGEMENT SYSTEM

Operations and Maintenance Work Plan
Yerington Mine Site
Yerington, Nevada

June 2017

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ACRONYMS AND ABBREVIATIONS

2007 USEPA Order	2007 USEPA Administrative Order for Remedial Investigation and Feasibility Study
ARC	Atlantic Richfield Company
Arcadis	Arcadis U.S., Inc.
EVS	enhanced evaporation system
FMS	fluid management system
FMS O&M Plan	Arimetco Heap Leach Fluid Management System Operation and Maintenance Plan
FMS Work Plan	Arimetco Heap Leach Fluid Management System Work Plan
gpm	gallons per minute
HASP	Health and Safety Plan
HDPE	high-density polyethylene
HLP	Heap Leach Pad
HITRA	Hazard Identification and Task Risk Assessment
MOL	maximum operational level
NDEP	Nevada Department of Environmental Protection
O&M	operation and maintenance
OSHA	Occupational Safety and Health Administration
OU	operable unit
PPE	personal protective equipment
psi	pounds per square inch
RD/RA	Remedial Design/Remedial Action
Site	Anaconda Copper Mine Site
SPS	Singatse Peak Services
TRA	task risk assessment
USEPA	United States Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
V	volt
VLT	Vat Leach Tailings

1 INTRODUCTION

Atlantic Richfield Company (ARC) has prepared this Arimetco Heap Leach Fluid Management System Work Plan (FMS Work Plan) to specifically address operation and maintenance (O&M) activities associated with drain-down fluids from Arimetco Heap Leach Pads (HLPs) at the Anaconda Copper Mine Site (the Site) under the Administrative Settlement Agreement and Order on Consent for (i) Remedial Design/Remedial Action (RD/RA), (ii) Site-Wide Remedial Investigation/Feasibility Study, and (iii) Fluid Management, entered into between the Nevada Division of Environmental Protection and ARC. The objectives of this FMS Work Plan include the following:

- Discuss the fluid management system (FMS) within the context of regulatory framework.
- Describe the current site settings and FMS components.
- Define the daily work activities, both routine and non-routine, required to manage the FMS.
- Describe FMS monitoring and data management activities.
- Describe the FMS site health and safety requirements.
- Describe site security activities as they relate to the FMS.

The primary objective of FMS activities at the Site is the containment and reduction of the inventory of residual Arimetco HLP drain-down solutions by passive evaporation from a series of ponds. This FMS Work Plan addresses the system in its current configuration. Any future ponds built and closure of existing ponds will be managed under a separate Work Plan as part of the RD/RA Work Plan and RD/RA Design.

1.1 Site Location and Background

The approximately 3,600-acre Site currently consists of an inactive open pit; waste rock piles; sulfide and oxide tailings facilities; spent HLPs; evaporation ponds; and processing facilities that include tanks, buildings, and remnant foundations. There are no current active mining operations at the Site; however, Singatse Peak Services (SPS), a subsidiary of Quaterra Resources Inc., owns a portion of the Site property. SPS has conducted drilling, exploration, and fluid management activities at the Site. Pursuant to a 2007 United States Environmental Protection Agency (USEPA) Administrative Order for Remedial Investigation and Feasibility Study (2007 USEPA Order; Comprehensive Environmental Response, Compensation, and Liability Act Docket No. 9-2007-0005), the USEPA divided the Site into operational units (OUs) as follows:

Arimetco facilities comprise one of the following eight OUs at the Site (OU-8) identified by the USEPA in the 2007 USEPA Order:

- OU-1: Site-Wide Groundwater
- OU-2: Pit Lake
- OU-3: Process Areas
- OU-4: Evaporation Ponds and Sulfide Tailings
- OU-5: Waste Rock Areas
- OU-6: Oxide Tailings Areas

- OU-7: Wabuska Drain
- OU-8: Arimetco Facilities.

1.2 Site Contact and Regulatory Information

ARC is responsible for general site and Arimetco FMS O&M activities. Arcadis U.S., Inc. (Arcadis), its contractor, performs these activities. All contractors and subcontractors who work at the Site are required to be licensed and bonded in accordance with the requirements of Nevada Administrative Code Chapter 624, certified for their equipment, and certified under the Occupational Safety and Health Administration (OSHA) for Hazardous Waste Operations and Emergency Response. The Nevada Department of Environmental Protection (NDEP) is the lead agency for the Site, with responsibilities for directing the Remedial Investigation/Feasibility Study process, including final closure and O&M activities. Cooperating regulatory agencies at the Site include the Bureau of Land Management, USEPA, and U.S Fish and Wildlife Service (USFWS). Site contact information is provided below:

- ARC

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  Project Manager
  Atlantic Richfield Company
  4 Centerpointe Drive
  LaPalma, California 90623-1066
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- Arcadis

  Assigned Personnel: Ron Hyatt, Will Reves
  Project Manager: Travis Phelps
  Site Safety Officer: Ron Hyatt
  Arcadis Field Office (Weed Heights)
  1 Austin Circle,
  Yerington, Nevada 89447
  Tel: (775) 463-9388
  Fax: (775) 463-9488
  Travis.Phelps@arcadis.com
  Ron.Hyatt@arcadis.com

The following contact information is provided for NDEP (lead regulatory agency at the Site):

- NDEP – Bureau of Corrective Actions

  Abandoned Mines Land Program Manager: Jeryl Gardner (775) 687-9484
  901 S. Stewart Street., Suite 4001
  Carson City, Nevada 89701

2 DESCRIPTION OF FLUID MANAGEMENT SYSTEM COMPONENTS

Arimetco FMS components, depicted on Figure 2-1, are summarized and described below:

- Five lined HLPs and perimeter leachate collection ditches
- Six HLP fluid collection ponds/sumps and transfer pumps
- Drain-down distribution pipeline system consisting of approximately 25,000 feet of pipe
- FMS Evaporation Ponds
- Enhanced evaporation system (EVS) on the Phase IV Vat Leach Tailings (VLT) HLP
- Electrical power supply system consisting of a 300-kilovolt ampere transformer providing 2,400 volt (V) overhead distribution service to FMS components north of Burch Drive, and an NV Energy transformer providing 70 amps of 480 V service at the Slot Pond
- Ultrasonic flow meters on the VLT and Slot Pond pump discharge pipeline; bubble flow meters on the drain-down collection pipeline discharging to the VLT Pond and Evaporation Ponds B and C; a level meter on the Slot Pond HLP drain-down collection ditch weir; and bird deterrents described in further detail in Section 3.1.2.

2.1 Heap Leach Pads

Inactive Arimetco HLPs that continue to produce drain-down fluids include the Phase I/II HLP, two Phase III HLPs, the Phase IV Slot HLP, and the Phase IV VLT HLP. Ultrasonic water level meters in weirs, pressure transducers, and data loggers are installed at the associated ponds to measure drain-down solution volumes and pond water levels. Available drain-down volume and flow data are included in the Arimetco (OU-8) FMS Water Balance Model Update (Brown and Caldwell 2017).

Phase I/II Heap Leach Pad

The Phase I/II HLP occupies approximately 14 acres. The solution ditch that surrounds the Phase I/II HLPs drains to the Phase I Pond. The current average annual drain-down rate is approximately 0.25 gallon per minute (gpm) (Brown and Caldwell 2017).

Phase III Heap Leach Pads

The Phase III South HLP occupies approximately 46 acres, and the Phase III 4X HLP occupies approximately 50 acres. The solution ditches surrounding the Phase III South HLP and the Phase III 4X HLP drain to the North Mega Sump, South Mega Sump, and Phase III-South HLP Sump. The current drain-down rate from the two HLPs is approximately 3.1 gpm (Brown and Caldwell 2017).

Phase IV Slot Heap Leach Pad

The approximate 86-acre Phase IV Slot HLP solution flows down into the Slot Pond. Currently, the annual average drain-down rate has decreased to approximately 2.9 gpm (Brown and Caldwell 2017).

Phase IV VLT Heap Leach Pad

Arimetco constructed the Phase IV VLT HLP on the southern portion of the former finger evaporation ponds and on native alluvial soils north of OU-6. The 54-acre Phase IV VLT HLP solution drainage ditch drains to the VLT Pond and, as needed to improve evaporation efficiency of the FMS, is pumped to one of two FMS Evaporation Ponds (B and C) described below. The current average annual drain-down rate is approximately 2.9 gpm (Brown and Caldwell 2017).

2.2 Fluid Management System Conveyance Components

The FMS components (ponds, pumps, and pipelines) help convey fluids throughout the system to increase storage and evaporation capacity. Solutions from the Phase I Pond are pumped into a 6-inch-diameter pipeline, which then connects to the 12-inch-diameter line that continues west beneath Burch Drive to the eastern corner of the Phase III South HLP. A 12-inch-diameter pipeline from the Phase IV South HLP Sump flows by gravity to this same location, which is where the diameters of the conveyance lines increase from 12 inches to 16 inches (Figure 2-1).

Two parallel 16-inch-diameter lines convey solutions past the former Media Pond, where a French drain and two sumps collect drain-down from the Phase III South HLP. Drain-down from the Phase III 4X HLP joins the 16-inch line that conveys flows from the Phase IV Slot, Phase I/II, and the Phase III South HLPs collected by the South and North Mega Sumps. The two pipelines continue to the evaporation ponds, where control valves are used to direct flows to the appropriate ponds. The ponds are shown on Figure 2-1 and summarized in Table 2-1. Pond capacity influences FMS operations under routine (average precipitation) conditions or non-routine or emergency (intense storm events, such as warm rain on snow) conditions.

2.3 Fluid Management System Collection and Evaporation Ponds

Table 2-1 lists each pond and its capacity, which add up to approximately 10.8 million gallons. FMS Ponds in the system are:

- Evaporation Pond B
- Evaporation Pond C
- Slot Pond
- VLT Pond
- Phase I Pond.

Table 2-1. Arimetco FMS Pond Design Specifications

Description	Slot 2 Pond	Slot Sed Pond	Phase I/II Pond	VLT Pond	VLT Sed Pond	Evap. Pond B	Evap. Pond C	Total
Crest Area (square feet)	44,384	6,681	15,368	44,400	~9,000	46,854	46,854	297,514
Crest Area (acre)	0.97	0.15	0.35	1.02	~0.21	1.07	1.07	4.84
Total Depth (feet)	22	6	8	18	NA	10	10	NA
Operational Maximum Water Depth (feet)	18	4	6	13	NA	9.0	9.0	NA
Maximum Operational Capacity (million gallons)	2.6	0.14	0.43	1.9	0.053	2.4	2.4	9.9
Operational High Water Freeboard (feet)	3.0	1	1	2.5	2.5	1	1	NA
Operational High Water Depth (feet)	18	5	7	15.5	NA	9.0	9.0	NA
Highest Operational Capacity (acre-feet)	9.2	0.61	1.53	7.98	~0.16	7.5	7.5	34.5
Highest Operational Capacity (million gallons)	3.0	0.2	0.5	2.6	~0.053	2.4	2.4	11.2
Primary Drain-Down Source(s)	**Slot HLP**	**Slot HLP & Leak Detector**	**Phase I HLP**	**VLT HLP & Leak Detector**	**VLT HLP**	**Phase III HLP**	**Phase III HLP**	**NA**

~ = approximately
NA = not applicable

2.4 Enhanced Evaporation System

A 4-inch high-density polyethylene (HDPE) SDR-11 pipeline runs from Evaporation Pond B, up the south side of the VLT HLP, and to a series of 80 standpipes with evaporation nozzles. The nozzles sit in a temporary HDPE-lined evaporation basin, which covers a 150,000-square-foot area. Each nozzle is capable of spraying 2.4 gpm of fluid at 50 pounds per square inch (psi). The system is powered by a pump capable of pumping 192 gpm at 200 feet of pressure head located at Evaporation Pond B.

2.5 Arimetco Leak Detectors

Fifteen leak detectors for the Arimetco FMS (Figure 2-1) include five leak detectors associated with the VLT HLP and Ponds, three associated with the Phase III-4X HLP, four associated with the Phase IV Slot HLP, and two associated with Evaporation Ponds B and C. Currently, two leak detector sumps have permanent pumps, and the other sumps are visually inspected and pumped using a temporary pump. Information and O&M manuals for pumps and flow meters installed in the leak detection sumps is provided in Appendix A.

2.6 Fluid Management System Electrical Power Source

An NV Energy substation provides electrical service to the Site via an overhead distribution line along the northern side of Burch Drive.

2.7 Fluid Management System Bird Deterrence

A variety of tools are setup around the FMS Ponds to assist in deterring birds. These tools may include items such as wind dancers and wetland wailers; however, tools may constantly change to verify that birds do not acclimate to any certain device and to confirm that new methods are deployed for maximum efficiency.

3 ARIMETCO FLUID MANAGEMENT SYSTEM OPERATION AND MAINTENANCE ACTIVITIES

FMS operations are conducted in accordance with this FMS Work Plan. Operational objectives include:

1. Prevention of fluids from escaping containment
2. Deterrence of birds from contacting the solutions
3. Inspection of system components and monitoring of system performance and condition
4. As needed, conveyance of solutions from one location to another to contain and evaporate the solutions
5. Performance of preventive maintenance and system repairs as required
6. Improvement of FMS performance where possible.

Daily inspection of the FMS components (e.g., electrical system, pumps, ditch liners, pipelines, and pond liners) and assessment of available pond capacity provides the basis for daily, weekly, and monthly fluid management and preventive maintenance decisions. O&M technicians prepare records and annual reports on these FMS activities.

3.1 Routine Activities

Daily O&M occurs during normal business hours (7:00 am to 4:00 pm), Monday through Friday. Bird deterrent occurs within an hour of sunrise and an hour of sunset. Each day begins with a safety meeting (e.g., review of activities and associated task risk assessments (TRA) based on an assessment of work-related risks). Routine Arimetco FMS inspections typically focused on downloading pond water levels and noting the condition of electrical systems, pumps, ditches, pipelines, and pond liners. When levels in the VLT Pond and/or Slot Pond approach maximum operational levels, or when pond solution levels needed to be balanced to optimize evaporation, fluids were diverted and/or pumped to FMS Evaporation Ponds B and C. Routine operational activities are described below.

1. All FMS Ponds are inspected first as part of the bird deterrent program:
   - Wind dancers are turned on.
   - Bird deterrents are checked for operation.
2. At approximately 7:00 am, the EVS is started up and run for approximately 3 hours. Two conditions are monitored throughout operation:
   - Wind speed and overspray are monitored to ensure that no overspray leaves the HLP.
   - Fluid level in the lined evaporation basin is monitored to ensure that fluid depth does not exceed 6 inches.

   The system will be automatically shut down should either of these two conditions be present.
3. FMS Evaporation Ponds B and C are inspected:
   - Staff gauges are checked to obtain the fluid level.
   - Pond surfaces are checked for the buildup of salt precipitate. If the pond not receiving flow has precipitate forming on the surface, flow is switched from the Mega Sumps to that Pond (B or C).

- During the summer evaporation period, Ponds B and C are kept at a minimum of 6 feet.
- In October, pumps are turned off at Ponds B and C to allow fluid levels to drop for winter storage.

4. While driving between the FMS Ponds, the pipelines are visually inspected for leaks.
5. The VLT Pond is inspected:
   - Staff gauges are checked to obtain the fluid level.
   - During the summer evaporation period, fluid is pumped from the VLT to the FMS Ponds B and C as often as needed to maintain the level in Ponds B and C at 6 feet.
6. The Mega Sump area is then inspected (inlet and outlet areas for the French drain).
7. The Slot Ponds are inspected:
   - Staff gauges are checked to obtain the level.
   - Fluids are pumped from the Slot Pond to any of the other ponds according to the fluid levels of those ponds.
8. The Phase I Pond is inspected:
   - One time in the spring, the Pond is pumped dry and a dam is built in the inlet so that any fluid going to the Pond is caught in a reservoir.
   - Fluids are pumped out daily from the reservoir into a portable poly tank and transferred to Ponds B and C.
   - Once temperatures approach freezing in the late fall, the dam is removed, and fluids flow into the Pond.
   - As required, fluids are pumped from the Pond using the portable water tank and transferred to Ponds B and C or where warranted by the current capacity conditions of the entire FMS.
9. Whenever fluids are transferred using pumps, the transfer volume is estimated from the flow rate and the duration of the pumping as well as flow meters at each pumping station.
10. Weekly levels are downloaded from pressure transducers in all Ponds.
11. Inflow weir water level meters, pond level transducers, bubble flow meters, and ultrasonic flow meters are checked, and the collected data are downloaded weekly. The data are analyzed to confirm that all instruments are operating properly.
12. Visual inspections of electrical power components are conducted daily including overhead power lines associated with the FMS, which are inspected while driving between the Ponds.
13. Routine inspections are performed to check leakage from pond liners, collection ditches, and French drains. Local accumulations of drain-down solutions within the ditches, leaks, or seepage areas outside containment (e.g., the observation of moist soils that may be attributed to FMS components) are documented. Leak detection sumps are visually inspected weekly for signs of moisture and the occurrence of chemical precipitates and/or sediments. Areas of exposed liner materials within the ponds are inspected for integrity and any accumulation of chemical precipitates or other solids.

3.2 Emergency Operations

NDEP will be notified in any event of a potential loss of fluid containment resulting from component failure (e.g., liner, pump, conveyance pipe) or extreme weather conditions (i.e., multiple consecutive days of high precipitation). Additionally, NDEP will be notified any time the evaporation ponds reach their maximum operational level (MOLs). Mitigation controls may vary pending time of year and weather forecasting. Each situation will be evaluated and communicated with the NDEP, and a mutually agreed control will be implemented. Some possible controls include:

1. Transfer fluids among FMS Ponds to maximize available storage space.
2. Reconnect the VLT pump to the spray system on top of the VLT HLP and pump to the top of the VLT HLP for short-term containment.
3. Mobilize temporary tanks for emergency storage.

Implemented emergency operations would continue until pond levels drop below approved MOLs. In all such instances, operational measures will be protective of authorized on-site personnel.

3.3 Bird Mitigation and Monitoring Program

ARC conducts bird mitigation and monitoring to prevent birds from landing on the VLT Pond, VLT Sediment Pond, FMS Evaporation Ponds, Slot 2 Pond, and Slot 2 Sediment Pond. These operations comply with Bird Mitigation Protocols adopted for the Yerington Site (Appendix B). Bird observations, reported monthly to the USFWS, include locations, species, and numbers of individuals. Deterrence used and hours deployed are also reported to the USFWS in the monthly report.

Increased observation/monitoring of ponds and increased numbers of deterrents are deployed during peak bird activity periods, including spring and fall migration, rainy periods that increase water levels in the ponds, and during the winter when other water bodies in the area are frozen. ARC understands that bird deterrent activities are dynamic in nature, subject to: 1) new guidelines provided by the USFWS and 2) changing as site conditions evolve resulting from removal actions or new activities (e.g., mining reuse).

3.4 Fluid Management System Maintenance

O&M technicians perform routine maintenance to confirm that the FMS functions in accordance with system objectives.

3.4.1 Routine Maintenance

Routine maintenance activities include the replacement of gauges, meters, and small pumps. As needed, pipeline leaks may be repaired by O&M technicians, or may require a qualified subcontractor. O&M technicians will not perform any maintenance on the FMS electrical system, which will be maintained by an electrician that is certified and licensed by the State of Nevada.

3.4.2 Non-Routine Maintenance

Non-routine FMS maintenance includes the repair and/or replacement of existing pipes, pumping equipment, and associated electrical systems (as needed) to maintain effective and safe fluid transfer operations. The FMS is not anticipated to generate hazardous waste streams because:

- Pump motors, except the VLT pump, are water-cooled and do not require oil.
- The VLT pump occasionally requires supplemental oil, but does not produce an oil waste.
- Replaced batteries are recycled.

ARC will notify the NDEP of any changing conditions associated with Arimetco facilities (e.g., deterioration, sun or wind damage, broken equipment) that may pose a potential operational issue and/or any health, safety, and environmental hazard.

Repairs to pipelines larger than 4 inches in diameter require a subcontractor (currently Desert Engineering). Such repairs may require that a temporary sump be installed to contain the leak. Malfunctioning pumps are typically repaired or replaced by a subcontractor (currently Owens Brothers Pump).

4 HEALTH AND SAFETY REQUIREMENTS

O&M activities will be conducted in accordance with the Site Health and Safety Plan (HASP; Arcadis 2016) The HASP identifies, evaluates, and prescribes control measures for health and safety hazards and describes emergency response procedures. HASP compliance is the responsibility of Arcadis, with ARC providing oversight and compliance assurance. Copies of the HASP are maintained at the Site and are available to all site workers. The HASP includes the following site-specific requirements and procedures:

- Safety and health risk or hazard analysis
- Employee training requirements
- Personal protective equipment (PPE) requirements
- Daily safety meeting requirements
- Medical surveillance program
- Site control measures (including dust control)
- Decontamination procedures
- Emergency response
- Assigned roles and responsibilities and specific training requirements
- Communications plan
- Simultaneous operations plan
- Identification of control of work-permitted activities
- Evaluating each task for hazards using TRAs in accordance with BP Hazard Identification Task Risk Assessment (HITRA)-Defined Practices.

4.1 Training

All site workers and contractors will receive applicable training, as outlined in 29 Code of Federal Regulations 1910.120(e) and as stated in the HASP. Site-specific training will be covered at the pre-entry briefing, with an initial site tour and review of site conditions and hazards. Records of pre-entry briefings will be maintained on site. Training elements include:

- Persons responsible for site safety
- Site-specific safety procedures
- Site-specific safety and health hazards
- Project- and task-specific work risk assessment and mitigation
- Use of PPE
- Decontamination procedures
- Emergency response procedures.

Other required training, depending on the activity or level of involvement, includes OSHA 24- or 40-hour training (depending on activity or level of involvement) and annual 8-hour refresher courses. Additional

training requirements may include, but are not limited to, first-aid/CPR and driver safety. Copies of training certificates will be maintained at the Site and in employee personnel records.

4.2 Personal Protective Equipment

Minimum PPE requirements while performing FMS O&M tasks include:

- Hardhat
- Steel-toed/steel-shank or equivalent boots (must meet American National Standards Institute Z41.1)
- Safety glasses or goggle with side shields
- High-visibility traffic safety vest (Class II)
- Long-sleeve shirt and long work pants.

Additional PPE may be required depending on the work task and may include, but is not limited to, gloves, hearing protection, face shield, goggles, chemical protective suits, rubber boots, respirators, or fall protection. The specific PPE requirements are identified in the TRAs, JSAs and HASP and may be modified based on site conditions.

4.3 Specific Health and Safety Procedures

As identified in the HASP and other project safety documents, some work activities are identified as high hazard potential and require additional safety precautions and approvals before the work commences. The following work procedures are expected or likely to occur during the FMS O&M activities. Additional details should be referenced in the HASP.

- Ground disturbance
- Working around water
- Heavy equipment
- Working at heights.

4.4 Task Risk Assessments

Detailed TRAs have been created for each of the individual tasks that comprise the FMS operation and for all field tasks required for this work. TRAs will be kept at the Site at all times and will be reviewed by site workers prior to and throughout the work activities to identify new hazards or controls. A summary of potential hazards associated with the FMS activities described in this Work Plan is provided in Table 4-1.

Table 4-1. Task Risk Assessment Summary

Field Activities	Potential Hazards
Monitor pond water levels using transducer or visual comparison to painted depth marks	• Walking around ponds with water, potential to slip on liner
Transfer solutions from FMS collection ponds (Slot, VLT, Phase I) to the FMS Evaporation Ponds	• Potential for contact with FMS water that is weakly acidic (pH 2 to 4); could cause minor skin/eye irritation • Possible electrical hazards when turning pumps on/off • Possible contact with insects and spiders in MCC buildings or around ponds
Measure pond inflow rates at v-notch weir using a meter	• Potential contact with FMS water • Walking on uneven ground surface around ponds and ditches; potential slip and fall hazard
Measure pumping rates during solution transfer	• Limited hazards when measured by flow meter on discharge line • Possible contact with FMS water • Potential slip hazard when walking on the pond liner
Inspect and pump leak detectors	• Potential for insects and spiders to be present inside the leak detectors, possible bites or stings • Potential injury when transporting, setting up, or refueling portable generator to run electric pump to purge detector • Possible contact with FMS fluids
Maintenance tasks (pumps, gauges, meters, valves, pipes, liners)	• Potential electrical hazards • May require working with heavy equipment to lift or move pumps • Working on or around pond liners with potential to slip and fall into pond • Possible contact with FMS fluids
EVS and Emergency management of excess fluids by pumping to VLT HLP	• Uneven walking surfaces on top of HLP, potential for slip, fall, or twisted ankle • Infrequently used equipment and valves may be difficult to turn on or adjust • Possible contact with FMS fluids • Noise hazard around large diesel-powered pump
Bird mitigation (observations, pyrotechnics, wind dancers, bird guard towers)	• Noise hazard around bird guard towers • Noise, fire, explosion hazard when handling pyrotechnic equipment • Electrical hazard when working with wind dancers • Walking/driving hazards around ponds

5 REFERENCES

Arcadis. 2016. Health and Safety Plan for the Yerington Mine Site.

Brown and Caldwell. 2010 Arimetco Heap Leach Fluid Management System, Operations and Maintenance Plan, Yerington Mine Site, July 16, 2010.

Brown and Caldwell. 2014 Annual Operations and Maintenance Report, Arimetco Heap Leach Fluid Management System, Yerington Mine Site, March 31, 2015.

Brown and Caldwell. 2017. Arimetco (OU-8) FMS Water Balance Model Update for the Yerington Mine Site. March 29.

USEPA. 2005. Anaconda/Yerington Mine Site Unilateral Administrative Order for Initial Response Activities. EPA Docket No. 9-2005-0011. April 25.

USEPA. 2007. Administrative Order for Remedial Investigation and Feasibility Study Comprehensive Environmental Response, Compensation, and Liability Act Docket No. 9-2007-0005

FIGURE

rjohnson
Dec 31, 2014 - 12:09pm

VLT POND (DIESEL PUMP WITH DURCO VLTSP BACKUP PUMP)*
149+31.96
4"Ø PIPELINE
PHASE IV- VLT HLP
140+00
4"Ø VLT DISCHARGE PIPELINE
16"Ø PIPELINE OUTLET TO DITCH
130+00
4"Ø PIPELINE
16"Ø PIPELINE
4"Ø DISTRIBUTION LINES W/ SPRINKLERS
FMS EVAPORATION POND A (INACTIVE)
FMS EVAPORATION POND B & C
CONTROL VALVES AT TEE
16"Ø PIPELINE
CONTROL VALVES AT WYE
120+00
110+00
100+00
90+00
16"Ø PIPELINE
PHASE III- 4X HLP
80+00
16"Ø PIPELINE
12"Ø PIPELINE
4"Ø PHASE III-4X COLLECTION LINE
CULVERT
NORTH MEGA SUMP
70+00
END 12"Ø PIPELINE/START 16"Ø PIPELINES
60+00
LINED FRENCH DRAIN
SOUTH MEGA SUMP DAM
12"Ø PIPELINE
LINED FRENCH DRAIN
PHASE III- SOUTH HLP SUMP
PHASE III- SOUTH HLP
50+00
40+00
PHASE I POND (DIESEL PUMP)*
SLOT 2 POND (2 H.P. TRANSFER PUMP)
12"Ø PIPELINE
6"Ø PIPELINE
PHASE II HLP
30+00
20+00
10+00
1+00
PHASE I HLP
PHASE IV- SLOT HLP
SLOT SEDIMENT POND (25 H.P. PUMP)
12"X8" REDUCER
8"Ø PIPELINE
SLOT 1 POND

DRAFT FINAL

LEAK DETECTOR ID		LOCATION
1	VLT D1	DITCH BY WEIR NORTH
2	VLT D2	DITCH BY WEIR SOUTH
3	VLT SP	SEDIMENT POND
4	VLT P1	VLT POND
5	VLT D3	DITCH BESIDE ROAD
6	III FX	4X HLP
7	II FX	4X HLP
8	I FX	4X HLP
9	SSP I	SLOT SEDIMENT
10	SD 2	DITCH BEHIND SLOT II POND
11	SD 1	DITCH BEHIND SLOT I POND
12	SD 3	DITCH BESIDE ROAD
13	EP "B"	EVAPORATION POND B
14	EP "C"	EVAPORATION POND C

EXPLANATION

- APPROXIMATE PIPELINE ROUTE
- MINE SITE BOUNDARY
- HEAP LEACH PAD (HLP)
- ACTIVE LINED POND
- INACTIVE LINED POND
- INACTIVE POND
- RECLAIMED POND
- FLOW DIRECTION
- COLLECTION/CONVEYANCE DITCH
- VALVE
- SUMP
- WETLANDS WAILER
- FRENCH DRAIN
- LEAK DETECTOR
- * PUMP CAN ALSO BE USED AT THESE LOCATIONS

Brown AND Caldwell

Date: Jan. 2015
Atlantic Richfield Company
Project: 145482

N W E S
400 0 400 800 FEET

Yerington Mine Site, Nevada

Figure 2-1
Active Arimetco Heap Leach Fluid Management Components

P:\Arco-Yerington\Site Qand\M Activities\145482 - Year 2014 Files\CAD\2015 Arimetco FMS O&M Report\Figure 2-1 - Arimetco Heap Leach FM Facilities.dwg

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